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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,952	10/02/2003	Haoren Zhuang	14580-038001	7296

20985 7590 12/10/2004

FISH & RICHARDSON, PC  
12390 EL CAMINO REAL  
SAN DIEGO, CA 92130-2081

EXAMINER
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ECKERT II, GEORGE C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">10/678,952</p>	<p>Applicant(s) </p> <p align="center">ZHUANG ET AL.</p>	
	<p>Examiner</p> <p align="center">George C. Eckert II</p>	<p>Art Unit</p> <p align="center">2815</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/> Paper No(s)/Mail Date _____.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/> Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|---|---|

## **DETAILED ACTION**

### ***Drawings***

1. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

on page 6, line 2 delete "harmmask" and insert --hardmask-- in its place.

on page 7, line 18, delete "makes" as it is redundant.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2 and 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,346,424 to Schindler et al. (hereinafter "Schindler"). Schindler teaches in figure 1 and column 3 at line 23 a method of making a ferrocapacitor comprising:

forming electrode elements 8 over a substructure 1, the electrode elements being in electrical contact with electrically conductive elements 3 which extend into the substructure 1; and

depositing ferroelectric material 10 between the electrode elements.

Regarding claims 2 and 4, Schindler teaches that the ferroelectric material is formed as a layer covering the sides of the electrode elements (see fig. 1), the method further including a step of depositing conductive support material 11 over the ferroelectric layer to fill gaps between the electrode elements 8 (see again fig. 1, and col. 4, lines 12-14). Regarding claim 5, Schindler teaches that the electrode elements are formed over an insulating layer 6 containing openings (col. 3, lines 32-35), the electrodes contacting the conductive elements 3 of the substrate through the openings (via connection 7). Regarding claims 6 and 7, the structure of Schindler's figure 1 is a device formed by the method as claimed and comprises a ferrocapacitor. Regarding claim 8, Schindler teaches the claimed structure including that the ferroelectric element 10 is formed on the lateral sides of the electrodes 8.

4. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,699,725 to Lee. Lee teaches, with reference to figures 7-10 and text beginning at column 4 line 38, a method of making a ferrocapacitor comprising:

Art Unit: 2815

forming electrode elements 17 over a substrate substructure (not shown) and connected to conductive elements in the substructure (e.g. source/drain regions, col. 2, lines 46-55); and depositing ferroelectric material 23 between the electrode elements.

Regarding claim 2, Lee teaches that the ferroelectric material is formed as a layer covering the sides of the electrode elements (fig. 7), and that the method further includes a step of depositing support material 252 (fig. 8, col. 4, lines 54-57) over the ferroelectric layer to fill gaps between the electrodes. Regarding claim 3, Lee teaches that the ferroelectric layer is etched to reduce its thickness (col. 4, lines 57-64). Regarding claim 5, Lee teaches the electrodes are formed over studs 13 in an insulating layer 11 to contact the source/drain regions. Regarding claims 6 and 7, Lee teaches in figure 10 a device formed by the method of claim 1 comprising a ferrocapacitor. Regarding claim 8, Lee teaches the structure claimed including forming the ferroelectric layer on the lateral sides of the electrodes.

### ***Conclusion***


5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art teaches structures and methods as instantly claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (571) 272-1728.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2815

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
GEORGE ECKERT  
PRIMARY EXAMINER